CBCS SCHEME

USN

Seventh Semester B.E. Degree Examination, July/August 2021
Multimedia Communication

Time: 3 hrs.

Max. Marks: 80

Note: *Answer any FIVE full questions.*

1 a. With a neat diagram, explain the following multimedia networks in detail.
   i) Telephone network
   ii) Data network. **(08 Marks)**
  b. Discuss the QoS parameters used in both circuit switched and packet switched networks. **(08 Marks)**

2 a. Explain the term 'multimedia'. Discuss the basic form of representation of text an image, audio and video. **(04 Marks)**
  b. Derive the maximum block size that should be used over a channel which has mean BER probability of 10^{-4}, if the probability of a block containing an error and hence being discarded is to be 10^{-1}. **(04 Marks)**
  c. Explain the operation of circuit switched and packet switched networks. **(08 Marks)**

3 a. Explain the following :
   i) Hyper text
   ii) Raster scanning. **(06 Marks)**
  b. With the help of diagram, explain the working of digital cameras. **(06 Marks)**
  c. Derive the bit rate and the memory requirements to store each frame that result from the digitization of both 525 – line and a 625 –line system, assuming a 4 : 2 : 2 format. Also find the total memory required to store a 1.5 hour movie/video. **(04 Marks)**

4 a. With a neat sketch, explain the principle of operation of interlaced scanning. **(06 Marks)**
  b. Derive the time to transmit the following digitized images at both 64kbps and 1.5Mbps
   A $640 \times 480 \times 8$ VGA compatible image
   A $1024 \times 768 \times 24$ SVGA compatible image. **(04 Marks)**
  c. Explain the following digital video formats :
   i) 4 : 2 : 2   ii) 4 : 2 : 0. **(06 Marks)**

5 a. With the help of block diagram, explain JPEG encoder. **(08 Marks)**
  b. Encode the string 'went•', comprising characters with probabilities of e = 0.3, n = 0.3, t = 0.2, w = 0.1, • = 0.1 using arithmetic coding. **(04 Marks)**
  c. What are the main features of DMS? **(04 Marks)**

6 a. A series of messages is to be transferred between two computers over a PSTN. The messages comprise just the characters A through H. Analysis has shown that the probability (relative frequency of occurrence) of each character is as follows :
A and B = 0.25, C and D = 0.14, E, F, G and H = 0.055. Use Huffman coding to derive a codeword set and prove this is the minimum set by constructing the corresponding Huffman code tree. **(06 Marks)**

   b. Write short notes on Lempel – Ziv coding. **(04 Marks)**

   c. With the help of diagram, explain the integrated management architecture for IP – based networks. **(06 Marks)**

7 a. Discuss about the ADPCM subband encoder and decoder. **(08 Marks)**

   b. With necessary schematic, explain MPEG – 4 coding principles. **(08 Marks)**

8 a. With the help of diagram, explain the working of LPC signal encoder and decoder. **(08 Marks)**

   b. Explain H·261 video compression standard with the help of macro block format frame format and GOB structure. **(08 Marks)**

9 a. Discuss about the NTI and CTI reconstruction schemes used in packet voice transmission. **(08 Marks)**

   b. Explain the multiplexing techniques used in ATM networks. **(08 Marks)**

10 a. With the help of necessary diagram, explain the video streaming across the internet. **(08 Marks)**

    b. Discuss about the different Error–Resilient video coding techniques. **(08 Marks)**

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